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INFORMATION ON POWER PLANTS I AND II OF THE ESPENHAIN COMBINE

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The power plant system of the Espenhain Combine is neither administratively nor economically independent, but is part of the combine. The entire combine is subordinate to the Main Administration for Liquid Fuels in the Ministry of Heavy Industry.

Development

Construction of the power plant system, planned to supply both industry and the general public, was begun in 1939. The first turboset was put in operation in fall 1940. During the following years, additional units were put in operation and, in spring 1945, the system's operable capacity was as follows:

Power Plant I -- three turbine aggregates, 50 megavolt-amperes each (condensing turbines); two turbine aggregates, 50 megavolt-amperes each (back-pressure turbines); and seven large boilers, 160 tons per hour each.

Power Plant II -- one turbine aggregate, 11.5 megavolt-amperes (back-pressure turbine); one turbine aggregate, 50 megavolt-amperes (back-pressure turbine); one turbine aggregate, 50 megavolt-amperes (combined back-pressure and condensing turbine); one turbine aggregate, 60 megavolt-amperes (condensing turbine); and six large boilers, 200 tons per hour each.

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During the years 1944-1945 the plant system suffered bomb damage. A heavy attack in April 1945 put it completely out of operation. Machinery, cooling towers, boilers, and electrical installations were heavily damaged. In July 1945, the first turbine was put back into operation. During succeeding years, all parts of the plant system were reconstructed. Reconstruction work on machinery and boilers was completed, for the most part, in 1950.

The Soviets took over the plant system in 1945, after the withdrawal of American troops. They immediately dismantled the 50-megavolt-ampere aggregate (combined back-pressure and condensing turbine) and two large boilers, 200 tons per hour each, including all auxiliary equipment, measuring and control installations, bus bars, cable, etc. A Krupp tube mill and a 52.5-megavolt-ampere transformer (6,300-115,000 volts) were also dismantled.

A new 60-megavolt-ampere turboset (condensing turbine), including all auxiliary equipment and electrical installations, was constructed during 1949 and 1950. Parts of this machine were already available at the plant at the end of the war.

In 1951 and 1952, a new boiler (200 tons per hour) was installed to replace the one which had been dismantled. In July 1954, the capacity of the plant was as follows:

6 generators, 50 megavolt-amperes each	300 megavolt-amperes
1 generator	11.5 " "
2 generators, 60 megavolt-amperes each	120 " "
Total	431.5 " "

With a power factor of $\cos \phi$ equals 0.8, this is the equivalent of 345 megawatts. The peak operating capacity was 320 megawatts. This figure was achieved by fully utilizing the capacity for steam production.

Manpower

The power plant system has 1,100 employees. This figure seems to be high; however, it must be pointed out that almost all work usually performed by other enterprises (e.g., assembly work and construction work) is carried out by the plant system's own workers. Women constitute 18 percent of the workers, and there is a tendency to increase the number of women workers. There are no apprentices in the plant system. All the training within the combine is carried out in a special training shop. There is a noticeable shortage of skilled workers, especially male workers.

Condition of Equipment

The condition of boilers is poor, and they are considerably less than economical to operate, because there is not enough time to carry out planned repairs. Cracks occur frequently in boiler tubes, and it is very difficult to procure suitable replacement material for tubes.

The condition of turbines is still satisfactory, although not especially so. Wheels are missing in some of the turbines, because replacement blades could not be procured by the prescribed deadlines.

Electrical installations are in good condition. However, the switches in the 100-kilovolt installation are not adequate for the short-circuit output which actually develops. The output amounts to more than 2,500 megavolt-amperes, but the switches are designed for only 1,500 megavolt-amperes.

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Production

Planned 1954 production of the power plant system is 2,156,000,000 kilowatt-hours, of which 1.6 billion kilowatt-hours are to be delivered to the public network. This production figure is quite high and can be achieved only if the necessary repair and maintenance work is carried out. At present, the plant is behind schedule in its production because of a breakdown in machinery (ground leakage on two phases of the rotor in generator No 8).

Moreover, it will be difficult to fulfill planned production because of operational conditions in the public network which often make it necessary to reduce megawatt output so that production of wattless current can be increased.

Consumption

About 20 percent of the power produced goes to cover requirements of the combine (mines, plant for low-temperature carbonization, briquette factories, and tar-processing plant); 5.8 percent is used to cover the power plant system's own requirements; and the remainder is delivered to the public network through eight 100-kilovolt lines.

Part of the steam produced in the power plant is supplied to the briquette factories and chemical plants as back-pressure steam.

Power Shutoffs

Power shutoffs continue to be necessary. They do not originate at the power plant, but are ordered by the subordinate load dispatcher for the network. These shutoffs occur because maximum requirements are greater than the total machinery and boiler capacity available for network production. Because repair and maintenance work is considerably behind schedule, the eastern power district alone is short about 200 megawatts in capacity necessary for orderly operations and for meeting all requirements.

Investment Projects

The following installations are to be completed by the end of 1955: two AEG (Allgemeine Elektrizitaets Gesellschaft, General Electric Company) turbosets, 72 megavolt-amperes each, with hydrogen-cooled generators, including the required 100-kilovolt transformers and switch installations; two concrete cooling towers; two KSG (Kohlenscheidungs Gesellschaft Zeitz, Zeitz Coal Separation [Equipment] Plant) boilers, 200 tons per hour each, including all the necessary auxiliary equipment; three 100-kilovolt overhead line fields; and a ground-fault neutralizer for the 6-kilovolt network.

The investment plan provides 35 million DM for this equipment, of which 7 million DM is available for use in 1954. Work has already been started. Orders for the turbosets have been submitted to the AEG, and orders for the boilers have been submitted to KSG Zeitz.

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Plant Security

The power plant system's security force consists of about 100 members of the People's Police. There is no civilian security force. Factory protection groups (Kampfgruppen) have been formed. The head [of the security force] for the entire combine is Carnetzi (fn), who is [also] director of the combine's technical school.

Subordinate groups have been formed in all departments of the combine. Matters relating to organization, membership, training schedules, etc. [of the security force] are kept strictly secret from nonmembers.

Rail Connections and Water Supply

The power plant system has rail connections to the Espenhain railroad station. Water supplies are received from the combine's own water plant, from the Roetha reservoir, and from a number of small waterworks in the vicinity.

Plant Management

The manager of the power plant system is Erich Groth, engineer [redacted] and member of the SED (Socialist Unity Party). The chief of turbine operations is Herbert Starke, engineer and SED member. The chief of boiler operations is Willi Will, SED member and formerly a master boilermaker.

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